

CLAIMS

1. A method for detecting features on an item, the method comprising the steps of:
acquiring a digital image of the item;
obtaining pixel data for a plurality of pixels in the digital image;
extracting line segment data from the pixel data;
identifying a plurality of collinear line segments from the line segment data;
identifying a plurality of intersecting lines from the line segment data; and,
identifying a plurality of features comprising the plurality of intersecting lines and the plurality of collinear lines;
wherein the intersecting lines intersect the plurality of collinear lines.
2. The method of claim 1 further comprising the steps of:
verifying that each collinear line segment from the plurality of collinear line segments has characteristic properties of an element of the plurality of collinear line segments; and,
removing from the plurality of collinear line segments each collinear line segment that does not have characteristic properties of an element of the plurality of collinear lines segments.
3. The method of claim 1 wherein the step of identifying the plurality of collinear line segments from the line segment data comprises the step of:

constructing a histogram displaying a number of line segments in a predetermined angular range from a plurality of predetermined angular ranges.

4. The method of claim 1 further comprising the step of: verifying that the identified plurality of features is located at a preselected location on the item.
5. The method of claim 1 further comprising the steps of: identifying a subsequent plurality of collinear line segments from the line segment data; identifying a subsequent plurality of intersecting lines from the line segment data; and, identifying a subsequent plurality of features comprising the subsequent plurality of intersecting lines and the subsequent plurality of collinear lines; wherein the intersecting lines from the subsequent plurality of intersecting lines intersect the subsequent plurality of collinear lines.
6. The method of claim 5 further comprising the steps of: determining whether the plurality of identified features and the subsequent plurality of identified features are substantially overlapping; determining whether the plurality of identified features and the subsequent plurality of identified features have substantially similar collinearity; and, merging the plurality of identified features and the subsequent plurality of identified features if the plurality of identified features and the subsequent plurality of identified features are substantially overlapping and have substantially similar collinearity.

7. The method of claim 4 wherein the item comprises a mail piece.
8. A system for identifying features on an item comprising:
 - a digital image acquisition module capable of acquiring a digital image of the item;
 - at least one processor; and,
 - at least one computer readable memory having computer readable code embodied therein, the computer readable code capable of causing the at least one processor to:
 - obtain pixel data for a plurality of pixels in the digital image;
 - extract line segment data from the pixel data;
 - identify a plurality of collinear line segments from the line segment data;
 - identify a plurality of intersecting lines from the line segment data; and,
 - identify a plurality of features comprising the plurality of intersecting lines and the plurality of collinear lines;
 - the intersecting lines intersecting the plurality of collinear lines.
9. The system of claim 8 wherein the computer readable code is further capable of causing the at least one processor to:
 - verify that each collinear line segment from the plurality of collinear line segments has characteristic properties of an element of the plurality of collinear line segments;
 - and,

remove from the plurality of collinear line segments each collinear line segment that does not have characteristic properties of an element of the plurality of collinear lines segments.

10. The system of claim 8 wherein the computer readable code is further capable of causing the at least one processor to: verify that the identified plurality of features is located at a preselected location on the item.
11. The system of claim 8 wherein the computer readable code is further capable of causing the at least one processor to: identify a subsequent plurality of collinear line segments from the line segment data; identify a subsequent plurality of intersecting lines from the line segment data; and, identify a subsequent plurality of features comprising the subsequent plurality of intersecting lines and the subsequent plurality of collinear lines; the intersecting lines from the subsequent plurality of intersecting lines intersecting the subsequent plurality of collinear lines.
12. The system of claim 11 wherein the computer readable code is further capable of causing the at least one processor to: determine whether the plurality of identified features and the subsequent plurality of identified features are substantially overlapping; determine whether the plurality of identified features and the subsequent plurality of identified features have substantially similar collinearity; and,

merge the plurality of identified features and the subsequent plurality of identified features if the plurality of identified features and the subsequent plurality of identified features are substantially overlapping and have substantially similar collinearity.

13. The system of claim 10 wherein the item comprises a mail piece.
14. A computer program product comprising:
a computer usable medium having computer readable code embodied therein, the computer readable code capable of causing a computer system to:
obtain pixel data for a plurality of pixels in a digital image;
extract line segment data from the pixel data;
identify a plurality of collinear line segments from the line segment data;
identify a plurality of intersecting lines from the line segment data; and,
identify a plurality of features comprising the plurality of intersecting lines and the plurality of collinear lines;
the intersecting lines intersecting the plurality of collinear lines.
15. The computer program product of claim 14 wherein the computer readable code is further capable of causing the computer system to:
verify that each collinear line segment from the plurality of collinear line segments has characteristic properties of

an element of the plurality of collinear line segments;
and,

remove from the plurality of collinear line segments each collinear line segment that does not have characteristic properties of an element of the plurality of collinear lines segments.

16. The computer program product of claim 14 wherein the computer readable code is further capable of causing the computer system to:
verify that the identified plurality of features is located at a preselected location on the item.
17. The computer program product of claim 14 wherein the computer readable code is further capable of causing the computer system to:
identify a subsequent plurality of collinear line segments from the line segment data;
identify a subsequent plurality of intersecting lines from the line segment data; and,
identify a subsequent plurality of features comprising the subsequent plurality of intersecting lines and the subsequent plurality of collinear lines;
the intersecting lines from the subsequent plurality of intersecting lines intersecting the subsequent plurality of collinear lines.
18. The computer program product of claim 17 wherein the computer readable code is further capable of causing the computer system to:

determine whether the plurality of identified features and the subsequent plurality of identified features are substantially overlapping;

determine whether the plurality of identified features and the subsequent plurality of identified features have substantially similar collinearity; and,

merge the plurality of identified features and the subsequent plurality of identified features if the plurality of identified features and the subsequent plurality of identified features are substantially overlapping and have substantially similar collinearity.